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DEPARTMENT OF FISH AND GAME

Jerry M. Conley, Director

Annual Project Closing Report
CLEARWATER RIVER DEVELOPMENT
OF
SPRING CHINOOK AND STEELHEAD STOCKS
COLUMBIA RIVER FISHERIES DEVELOPMENT PROGRAM

Period Covered: October 1, 1984 to September 30, 1985

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by

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ABSTRACT

For the first year since 1981, eyed spring chinook eggs were planted in Indian Creek Incubation Channel on the upper Selway River. A total of 1.48 million chinook eggs from Pahsimeroi Hatchery were placed in the channel during September and October of 1985.

A total of 80,000 spring chinook smolts were released from Red River Rearing Pond in April 1985. In June, approximately 152,000 chinook fingerlings were released into the pond. These will be released into Red River in April of 1986.

Chinook redd counts were the highest ever recorded in Red River during 1985. Counts also increased significantly in most other Clearwater drainage trend areas in 1985.

A total of 914,350 eyed steelhead eggs from Dworshak National Fish Hatchery were planted in Red River Incubation Channel during May of 1985. Over 8,600 unspawned adult steelhead were trucked from Dworshak and Kooskia National Fish hatcheries to selected tributaries within the Clearwater drainage during 1985.

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INTRODUCTION

Historically, the Clearwater River drainage supported major runs of summer Chinook salmon and summer steelhead trout. Also, it was believed that small populations of fall Chinook and coho salmon spawned in the drainage. In 1927 the Washington Water Power Company built a hydroelectric dam four miles upstream from the mouth of the Clearwater. Inadequate fish passage at the dam virtually eliminated chinook runs into vast spawning and rearing areas. Although steelhead were able to negotiate the ladder, it was felt the population was reduced. It was not until the late 1940s that the passage problems were corrected and chinook began to move over the dam. In 1973 the dam was removed as part of making Lewiston an inland seaport.

In the late 1920s, another hydroelectric dam was built by Washington Water Power in the South Fork of the Clearwater River near Stites, Idaho. This dam stopped all upstream fish movement until 1963 when it was removed. In 1970 the North Fork of the Clearwater was lost to salmon and steelhead production by the construction of Dworshak Dam. Dworshak National Fish Hatchery was built to mitigate for the loss of steelhead.

This report summarizes the activities that occurred during 1985 as part of the efforts to restore salmon and steelhead to the Clearwater drainage. Also attached to the report is an appendix that describes the history of those efforts from 1961 to 1985. The historical perspective mostly covers offsite introductions of eyed eggs to hatching channels and releases of fry, fingerling and smolts, rather than detailed descriptions of hatchery operations with their success and failures. Two federal hatcheries, Dworshak and Kooskia, were completed to the early 1970s within the Clearwater drainage. A third hatchery comparable in size to Dworshak is expected to be completed by 1990.

REPORT OF PROGRESS

Eyed Egg Plants and Fry Emergence

Steelhead -

On 8 and 13 May 1985, 546,850 and 184,250 eyed steelhead eggs, respectively, from Dworshak National Fish Hatchery (DNFH) were planted in the Red River Incubation Channel on the upper South Fork Clearwater. On 17 May, an additional 183,250 eyed eggs were planted, bringing the total in the channel to 914,350. All eggs were thought to be IHN-Negative. Red River Ranger District personnel assisted in placing the eggs in the channel and monitoring flow and fry emergence. Plants of eyed steelhead eggs in Red River Incubation Channel since 1978 are summarized Table 1 . Fry emergence was good at Red River during the spring of 1985. All fry were released directly into the

river from the channel and were not enumerated. No steelhead eggs were available for placement into the Meadow Creek Hatching Channel on the South Fork Clearwater. Past channel activities are summarized in Table 2.

Spring Chinook -

For the first time since 1981, eyed spring Chinook eggs were available for planting in Indian Creek Incubation Channel on the upper Selway River. On 25 September, Department personnel transferred 287,810 Rapid River eggs from Pahsimeroi Hatchery to Indian Creek. On 4 October and 10 October, an additional 620,000 and 570,000, respectively, were planted, bringing the total in the channel to 1.48 million. This is the first year since 1978 that an upriver stock of eggs has been available. Eggs from the Cowlitz Hatchery in western Washington were placed in the channel in 1979, 1980 and 1981. Numbers and origin of eggs placed in the channel and resultant emerging fry each year since 1970 are summarized in Table 3.

Fry, Fingerling, Smolt and Adult Releases

Steelhead -

Because an excess of adult steelhead returned to DNFH during the spring of 1985, fish were trucked to drainages within the Clearwater River to bolster wild steelhead seeding rates. Drainages selected for release were Potlatch, Lawyers and Lolo creeks and the South Fork Clearwater River. Between 27 March and 2 May, 8,610 adults were trucked from DNFH (7,646) and Kooskia National Fish Hatchery (KNFH) (964) (Table 4). It was important that they were close to spawning before release so they would not return to the hatchery. Some of the early releases of opercule-punched fish returned back to DNFH.

Adult steelhead appeared to readily spawn in those drainages. Many of the drainages that received adult releases supported numerous fry in June and July. The Fisheries Assistance Office (FAO) from DNFH evaluated their contribution to stream production. Crooked River yielded densities that exceeded 700 fry/100m^2. The FAO plans to follow up summer densities of age 1+ fish in 1986.

Also during 1985, selected Clearwater River tributaries received small releases from DNFH. A total of 420,916 smolts were trucked to the Lolo Creek and South Fork Clearwater drainages from 29 April to 2 May (Table 4). In 1981, 1982 and 1983, approximately 0.5 million DNFH smolts were released into Clear Creek and the South Fork Clearwater River from the Mt. Idaho Bridge, primarily to distribute adult steelhead above Orofino in the mainstem Clearwater and increase fishing opportunity (Appendix A, Tables 5, 6, 7, 8). Because of exceptional survival during the 1982 smolt release year, numerous 2-ocean steelhead returned to the Mt. Idaho area in 1985 to spawn. Fishing was considered very good during the spring of 1985.

Table 1. Summary of eyed egg plants into Red River Incubation Channels, 1978-85 (DNFH - Dworshak National Fish Hatchery)

Year	Species	Number of eggs planted	Egg source	Distribution
1978	Steelhead	1,617,750	DNFH	All at channel
1979	Steelhead	1,644,500	DNFH	All at channel
1980	Steelhead	699,500	DNFH	All at channel
1981	Steelhead	1,526,000	DNFH	All at channel
1982	Steelhead	1,500,000	DNFH	All at channel
1983	Steelhead	1,280,000	DNFH	All at channel
1984	Steelhead	0	-	
1985	Steelhead	914,350	DNFH	All at channel

Table 2 Summary of eyed egg plants into Meadow Creek (South Fork Clearwater) Incubation Channel, 1981-85.

Year	Species	Number of eggs planted	Egg source	Distribution
1981	Steelhead	1,360,000	DNFH	All at channel
1982	Steelhead	1,140,000	DNFH	All at channel
1983	Steelhead	766,750[1]/	DNFH	All at channel
1984	Steelhead	0		
1985	Steelhead	0		

[1]/Eggs were IHN-positive.

Table 3. Comparison of fry emergence percentages at Indian Creek Incubation Channel from eyed eggs planted during the fall of one year and resultant fry emerging during the spring of the following year, 1970-85.

Year	Number of eggs placed In channel (fall)	Number of fry emerging (spring)	Percent emergence	Egg source
1970	2,214,941	-	-	Rapid River
1971	1,623,080	839,716	37.9	Carson National
1972	2,956,179	524,710	32.3	Rapid River
1973[1]/	2,029,316	1,613,550	54.6	Rapid River
1974	2,207,000	962,335	47.4	Cowlitz Hatchery
1975	2,406,731	770,000	34.9	Rapid River
1976[2]/	1,613,383	400,000	16.6	Rapid River
1977[1]/	2,740,470	723,960	44.9	Rapid River
1978	2,135,672	1,458,980	53.2	Rapid River
1979	2,540,000	1,047,890	49.1	Cowlitz Hatchery
1980[1]/	2,500,000	1,213,440	47.7	Cowlitz Hatchery
1981	2,500,000	1,335,042	53.4	Cowlitz Hatchery
1982	0	1,436,800	57.5	-
1983	0	0	-	-
1984	0	0	-	-
1985	1,481,000	0	-	Pahsimeroi Hatchery

[1]/ Extremely light snow pack and low runoff.
[2]/ Channel tender stayed at channel from Nov. 1 - June 15 each year after 1976.

Table 4. Releases of steelhead adults and smolts from DNFH into the Clearwater River drainage during 1985.

Date	Release site	Number released	Number per pound	Egg source
3/27	Cedar CF. (Potlatch Cr.)	402	Adult	DNFH
3/28	E. Fk. Potlatch Cr.	383	Adult	DNFH
4/3	Little Boulder Cr. (Potlatch Cr.)	408	Adult	DNFH
4/4	Lawyers Creek	303	Adult	DNFH
4/3-17	American River	1,891	Adult	DNFH
4/17-19	Eldorado Cr. (Lolo Cr.)	1,150	Adult	DNFH
4/18-5/2	Newsome Cr.	2,043	Adult	DNFH
4/24-5/2	Crooked River	2,030	Adult	DNFH
	Subtotal	8,610		
4/29-30	American River	138,077	7.9	DNFH
5/1	American River	24,034	7.9	DNFH
4/29-30	Crooked River	18, 508	7.9	DNFH
5/1	Crooked River	15,962	9.7	DNFH
5/1	Crooked River	7,765	8.1	DNFH
5/1-2	Newsome Cr.	95,286	8.0	DNFH
4/29-30	Eldorado Cr. (Lolo Cr.)	76,348	7.2	DNFH
5/1	Eldorado Cr. (Lolo Cr.)	44,936	7.7	DNFH
	Subtotal	420,916		
4/30-5/1	Clear Cr. (KNFH)	145,206	9.3	DNFH
	Subtotal	145,206		
4/29	Mainstem Clearwater (DNFH)	672,334	6.4	DNFH
5/2	Mainstem Clearwater (DNFH)	165,976	8.0	DNFH
5/3	Mainstem Clearwater (DNFH)	197,263	8.1	DNFH
	Subtotal	1,035,573		
	Total Smolts	1,610,305		

Table 5. Summary of Red River Pond spring chinook production, 1977-85

Year	Data released into pond	Number released into pond	Number per pound when placed in pond	Source	Date released from pond	Estimated number released from pond	Number per pound when released	Number marked	Percent marked	Type of mark
1977[1]/	7/6-12	501,600	100	Rapid River	8/30	350,000	ND	0	0.0	-
1978	6/28	200,025	127	Rapid River	9/21	200,000	ND	37,200	18.6	CWT/AdCL
1979	7/2	232,500	155	Rapid River	9/28	225,000	27	45,000	20.0	CWT/AdCL
1980	6/24	293,600	115	Rapid River	9/18	265,000	25	51,000	19.2	CWT/AdCL
1981	5/29	282,000	140	Carson	9/10	268,000	17	9,000	3.4	Frz Brnd
1982[2]/	-	0	-	-	-	-	-	-	-	-
1983	6/14	306,000	255	Rapid River	10/20/83	260,000	21	60,000	23.1	CWT/AdCL /FB
					4/17/84	40,000[2]/	ND	40,000	100.0	CWT/AdC L/FB
1984[3]/	7/2	80,000	160	Red River	4/18/85	80,000	22	0	0.0	-
1985[3]/	6/26	152,000	105	Red River						

[1]/ Fish were heavily infected with "Ich" in 1977 and were released early; survival was probably poor after release.

[2]/ 98,000 Age 0 Chinook (Rapid River stock) that were reared at Hagerman National Fish Hatchery were released into Red River near the pond in June.

[3]/ Fish overwintered in pond and released in spring.

Table 6. Spring Chinook spawning surveys in Clearwater River drainage, 1985.

	Date	Streams	Section	Redds	Live fish	Dead fish
Ground Count	8/27	Crooked Fork	Rock Cr. - Cliff Hole	47	55	3
	8/27	Brushy Fork	Rd. 373-C Junction - 1 mile downstream	14	11	3
	9/3	Selway River	Magruder Crossing - Little Clearwater	15	7	1
	9/5	Newsome Cr.	Nugget Cr. - Beaver Cr.	2	0	0
	9/5	Crooked River	Relief Cr. - Upper end of airport	4	2	3
	9/5	Red River	Moose Butte Rd. - Red River R.S.	40	21	6
Aerial Count	9/4	Red River	Cole 66 Bridge - Red River RS	92	34	-
	9/4	Red River	Ditch Cr. - Otterson Cr.	130	40	-
	9/4	Crooked River	Narrows - Orogrande Lodge	10	4	-
	9/4	Newsome Cr.	Mouth - Radcliff Cr.	7	2	-
	9/4	American River	Johnson Dredge - Manes Ranch	23	10	-
	9/4	Lolo Cr.	Mouth - Yakus Cr.	0	0	-
			Yakus Cr. - Eldorado Cr.	0	0	-
			Eldorado Cr. - Yousa Cr.	12	9	-
	9/3	Crooked Fork	Mouth - Brushy Fork	2	2	-
			Brushy Fork - Shotgun Cr.	18	1	-
			Shotgun Cr. - Boulder Cr.	0	0	-
			Boulder Cr. - Hopeful Cr.	0	0	-
	9/3	Brushy Fork	Mouth - Twin Cr.	7	0	-
			Twin Cr. - Spruce Cr.	5	2	-
	9/3	White Sand Cr.	Mouth - Beaver Cr.	0	0	-
			Beaver Cr. - Storm Cr.	0	0	-
			Storm Cr. - Colt Cr.	0	0	-
			Colt Cr. - Big Sand Cr.	0	0	-
			Big Sand Cr. - Big Flat Cr.	0	0	-

Table 8. Clearwater River drainage chinook salmon redd counts, 1973-1985.

Streams	Method of survey	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	5-yr Avg.	1985
Selway Drainage															
Selway River	Aerial	261	66	21	58	97	125	21	40	47	38	26	30	36	40[1]/
Bear Creek	Aerial	26	10	5	14	18	13	3	7	8	8	8	6	7	NC
White Cap Creek	Aerial	7	2	1	4	1	NC	2	3	4	3	4	6	5	NC
Moose Creek	Aerial	32	15	4	15	23	17	4	4	6	5	6	7	6	NC
Subtotal		326	93	31	91	139	155	30	54	65	54	55	49	53	40
Lochsa Drainage															
Crooked Fork	Ground	60	22	6	36	51	37	6	16	27	34	7	28	22	47
Brushy Fork	Aerial	NC	6	4	13	15	25	12	10	25	17[2]/	6[2]/	9[2]/	13	14[2]/
Subtotal		60	28	10	49	66	62	18	26	52	51	13	37	35	61
South Fork Drainage															
Newsome Creek	Aerial	NC	3	10	5	17	22	9	7	7	5	7	1	4	7
Crooked River	Aerial	NC	5	41	13	50	23	4	8	9	4	12	22	9	10
Red River	Aerial	NC	12	20	15	50	52	20	38[3]/	80	159	193	175	129	222
American River	Aerial	NC	NC	NC	NC	NC	NC	NC	7	12	21	9	NC	-	23
Subtotal		-	20	71	33	117	97	33	60	108	189	221	198	155	262
TOTAL		386	141	112	173	322	314	81	140	225	294	278	284	243	363

[1/] Estimate by expansion using previous 5 years ground/aerial ratio.
[2/] Ground count rather than aerial,
[3/] New section added from Ditch Creek to Otterson Creek.

Plans for 1984 and 1985 called for Increasing the distribution of steelhead smolts into the headwater tributaries of the South Fork Clearwater to enhance upstream adult distribution for increased fishing opportunity and production. These releases are described in Appendix A.

Chinook -

Approximately 1.6 million spring chinook fry, fingerlings and smolts were released into the Clearwater River drainage during 1985 from hatchery operations (Table 9). Chinook production from Red River Rearing Pond each year since its construction in 1977 is summarized in Table 5. Fish have been successfully over-wintered in the pond for the past two winters and will be held over again during the 1985-86 winter. Marked returns from the first spring release (spring 1984) will be returning as age 4 fish in 1986.

Spring Chinook Spawning Surveys

For the second year in a row, spring chinook redd counts increased significantly in almost all trend areas within the Clearwater drainage. The only exception was Crooked River where the 1985 redd count was approximately half that of 1984 (Table 6). The Lochsa and South Fork Clearwater redd counts were completed during good weather. However, due to 14 straight days of rain and cloudy weather from 5-19 September, aerial counts on the Selway drainage were not done. Only the ground count portion of the Selway was completed in 1985.

A record 222 chinook redds were counted in the Red River trend areas in 1985. Since the first adults originating from Red River Rearing Pond releases returned in 1981 (1978 release), an average of 166 redds have been counted in Red River trend areas each year. In the five years prior to pond returns, redd counts averaged 35.

We measured 211 adult chinook from Red River during the 1985 spawning run. Of these, 125 were measured at the weir and 86 were recovered as carcasses on the spawning grounds. Lengths of Red River chinook measured in 1985 are listed in Table 7. Age 5 fish comprised 85.3% of the fish measured, age 4 made up 13.7% and jacks 1.0%. Age 5 fish in the 1985 run were unusually high compared to runs since 1982 (Fig. 1).

The 47 redds counted in Crooked Fork in 1985 were the highest total since 1977, and more than doubled the previous 5-year average (Table 8).

Table 9. Releases of spring Chinook salmon fry, fingerlings and smolts into the Clearwater River drainage from KNFH, DNFH and Red River Pond during 1985.

Date	Release site/ hatchet rearing	Number released	Number per pound	Egg source
3/22	Clear Cr. (KNFH)	63,635	14.7	KNFH
3/28	Clear Cr. (KNFH)	238,118	20.3	KNFH
	Subtotal	301,753		
4/3	N.F. Clearwater (DNFH)	365,791	20.7	Levenworth
4/3	Clearwater (DNFH)	713,835	23.5	Little White
4/3	N.F. Clearwater (DNFH)	57,513	14.4	Little White
4/24	N.F. Clearwater (DNFH)	43,000	250.0	Levenworth
	Total	1,180,139		
4/18	Red River (Red River)	80,000	21.5	Red River
	Subtotal	80,000		
	Total Smolts	1,561,892		

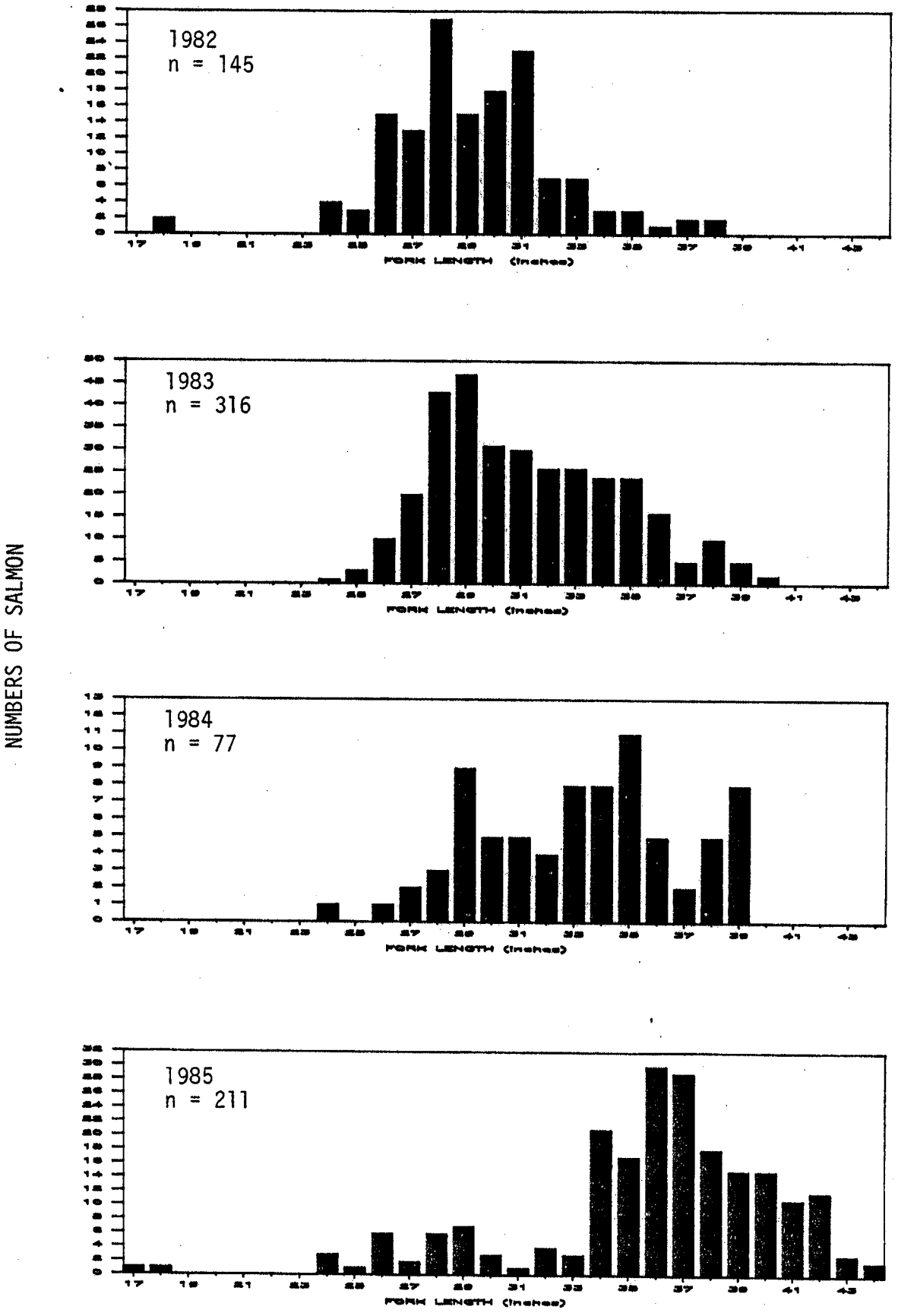

Figure 1. Length frequencies of adult chinook salmon recovered in the Red River drainage between 1982-85.

As mentioned, inclement weather prevented the aerial portion of the Selway redd count. Comparing the ground count sections only (Magruder Crossing to Little Clearwater), the 1985 count (15) was more than double the 1984 count (7) and slightly higher than the previous five-year average (13) (Table 8) .

Red River Weir

The adult chinook weir and trap on Red River has been installed just upstream from the confluence of the rearing pond outflow with Red River annually since 1983 (Table 10). Because the weir is only a temporary structure, high flows have hampered our efforts to achieve an installation date which is early enough to obtain an estimate of the total adult Chinook return to upper Red River. Spring runoff In 1985 was considerably below normal, which allowed installation of the weir on 21 June. However, because of the lower flows, the fish arrived about a month earlier than normal, and we still missed a great percentage of the run.

During the three-year period, an average of 120 redds have been counted each year upstream from the weir. An average of 40 redds have been counted each year from the weir downstream to the Moose Butte Road Bridge.

Estimated adult chinook returns to Red River which have resulted from juveniles released from Red River Rearing Pond are summarized in Table 11. Assumptions which were made to obtain these estimates were: 1) we counted 80% of the total Chinook redds in the Red River drainage; and 2) there were 2.75 adult chinook present for every redd counted. These calculations estimated returns to Red River of 547 adult chinook in 1982, 663 in 1983, 602 in 1984 and 650 in 1985.

Adult Spring Chinook Returns to the Clearwater River

In 1927, Washington Water Power Company completed a dam at the mouth of the Clearwater that virtually stopped chinook salmon migration into the drainage. During construction, a fish ladder was built on the north side of the dam that was inadequate to pass fish. By 1939, It was realized that salmon were not migrating over the dam, so an additional ladder was constructed on the south side and a fishway was built through the power house.

The first effort toward re-establishment of chinook into the Clearwater drainage began in 1947. Between 1947 and 1953 about 100,000 eggs were taken annually from spring chinook from the headwaters of the Middle Fork Salmon River drainage. Most of the resultant fingerlings (250,000) were released into the Little North Fork of the Clearwater. During the early 1950s, chinook began crossing the Lewiston Dam (Table 12).

Table 10. Summary of operation of Red River adult chinook weir and trap, 1983 - 1985.

Date Installed	Date removed	Total days operated-	Adult chinook collected			Redds counted upstream from weir	Redds counted from Moose Butte Bridge to weir
			Females	Males	Total		
12 July 83	12 Sept 83	62	73	65	138	119	45
7 July 84	13 Sept 84	62	65	46	111	112	35
21 June 85	11 Sept 85	82	69	56	125	130	40

Table 11. Estimated adult spring chinook returns to Red River resulting from pond releases based on expansion of redd counts, 1981-1985.

Brood year	Release year	Year outmigrating	Year returning	Estimated return of 4-year olds	Year returning	Estimated return of 5-year olds	Number trapped	Total estimated return
1977	1978	1979	1981	275	1982	93	0	368
1978	1979	1980	1982	454	1983	278	138	870
1979	1980	1981	1983	385	1984	409	111	905
1980	1981	1982	1984	193	1985	650	0[2]/	843
1981	1982[1]/	1983	1985	115	1986	-		
1982	1983	1984						

[1]/ No fish were released from Red River pond in 1982.
[2]/ Trap was operated in 1985, but all fish were released upstream.

Table 12. Spring Chinook counts over Lewiston Dam (1950-72) with present estimates (1973-85).

Year	April	May	June	July	August	Total
1950	--	--	1	6	2	9
1951	---	--	15	12	8	35
1952	--	--	7	7	--	14
1953	--	5	23	35	3	66
1954	--	--	2	15	1	18
1955	--	--	4	6	3	13
1956	--	2	7	4	1	14
1957	--	11	42	98	--	151
1958	--	--	11	11	1	23
1959	--	--	5	3	2	10
1960	--	14	15	14	--	43
1961	2	24	82	28	--	136
1962	--	1	6	5	1	13
1963	--	--	5	__	--	5
1964	--	--	33	31	2	66
1965	--	112	124	82	--	318
1966	3	75	148	129	--	355
1967	4	39	131	252	2	428
1968	--	186	261	528	15	990
1969	1	697	1,742	103	4	2,547
1970	87	427	562	620	4	1,700
1971	--	107	801	1,277	2	2,187
1972	1	172	2,060	1,199	35	3,467

- Lewiston Dam Removed -

	Regression estimate	KNFH rack return	DNFH rack return	Red River estimates	
1973	5,676	50			5,726
1974	2,074	37			2,111
1975	1,647	221			1,868
1976	2,544	801			3,345
1977[1]/	4,735	3,023			7,758
1978	4,618	2,045			6,663
1979	1,191	382			1,573
1980	2,059	68			2,127
1981	3,309	268			3,577
1982[2]/	1,985	255		547	2,787
1983[2]/	1,250	365		663	2,278
1984[2]/	1,603	343	82	602	2,630
1985[2]/	2,074	536	334	765	3,709

[1]/Includes 1,200 adults transported from KNFH to So. Fk. Clearwater and Lochsa drainages.

[2]/Red River redd counts were not included in the regression estimates.

It was not until 1961 that the Department of Fish and Game began a program to re-establish chinook in the Clearwater drainage. Most of the efforts were directed toward the Selway River because of its pristine condition. Between 1961 and 1964, approximately 7.4 million spring and summer chinook eyed eggs were placed Selway River tributaries (Appendix B). A fishway was completed in 1966 that allowed for passage of chinook over Selway Falls during high water periods. The fall was more of a migration barrier at high water than low water.

Between 1961-85, approximately 60 million eyed chinook eggs were placed into the Clearwater River drainage (Appendix B). Most were spring chinook, but a few were summer chinook. A majority were put into the Selway drainage via direct river and streambed plants and hatching channels. Other releases included hatching channels within the South Fork Clearwater drainage in Red and Crooked rivers. Also, approximately 7 million fry, fingerlings and smolts were released into the South Fork Clearwater and Lochsa River drainages. All the chinook releases from 1961 to 1985 are provided in Appendix A.

Releases of chinook fry, fingerlings and smolts from DNFH and smolts from DNFH and KNFH are summarized in Tables 1, 2, Appendix A. Between 1971 and 1985, approximately 10 million smolts and 5.5 million fry and fingerlings were released from both hatcheries. Overall, approximately 82 million chinook eyed eggs, fry, fingerlings and smolts have been released into the Clearwater River drainage since 1947 Appendices A, B).

The returns from those releases are described in Table 12. Returns from 1950 to 1972 are described by counts over the Washington Water Power (WWP) Dam. In 1973, the dam was removed during construction of Lower Granite Dam which made Lewiston a seaport in 1975. Estimates after 1972 were made by correlating redd counts within the Clearwater drainage and returns over the WWP Dam from 1967-72 (Fig. 2). The regression equation ($r = .973$) was used to estimate what could be expected to cross the dam after 1972 based on current redd counts. Because of increased adult chinook returns to Red River after 1981, redd counts from that drainage were not used as part of the total enumeration. Instead, the actual Red River adult estimates were added to the total after 1981 (Table 12).

Chinook returns to the Clearater increased from 1950 to the mid-1970s. From the mid-1970s to present, the estimates decreased and then increased. Much of the increased success in returns was associated with hatchery-produced fish. Despite the slow response of chinook returning to the Clearwater drainage since the late 1970s, Red River redd counts increased 11-fold from 1979 to 1985 (Table 8). Estimates of adult returns increased from 547 in 1982 to 765 in 1985 (Table 11).

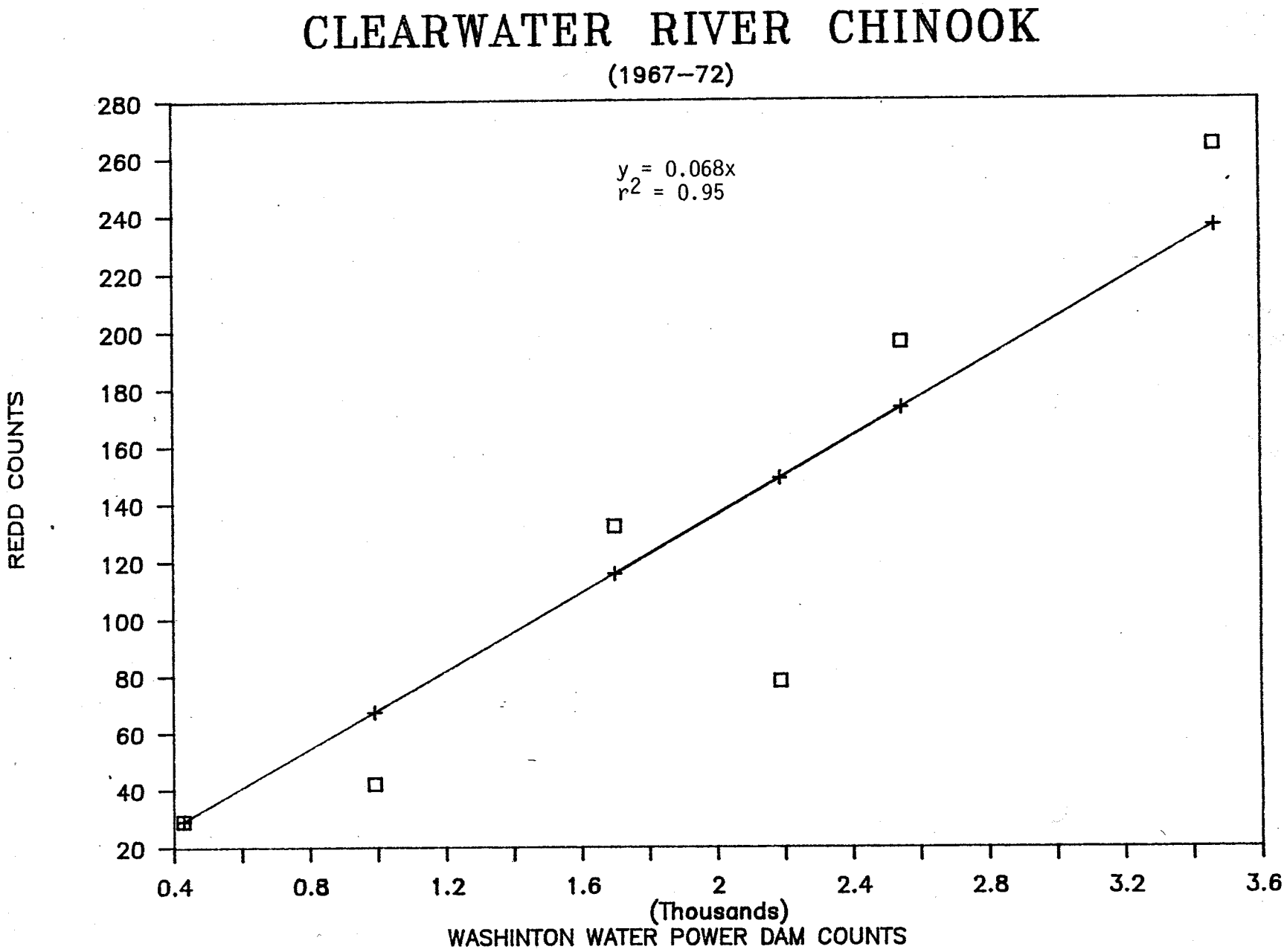

Figure 2. Regression analysis of chinook salmon redd counts vs WWP dam counts from the Clearwater River drainage between 1967-72.

The dramatic increase in Chinook to Red River was the direct result of the pond program which started 1n 1977 (Table 6). A key component to that program was the availability of an upriver chinook stock that was taken from Rapid River Hatchery. In 1981 the pond was filled with a chinook stock from Carson National Fish Hatchery. Only 9,000 of those fish were freeze branded before release but none of the marked fish were recovered in either 1984 or 1985, suggesting poor survival of the Carson stock (Table 13) .

Survival rates from CWT chinook returning to Red River ranged from .016% to .084% in the early 1980s (Table 13). These are likely minimal rates because not all of the tagged fish were recovered during the spawning ground surveys. If the CWT's were recovered at a rate of 50%, the expected return from pond-released fish from brood years 1977-1979 would have been 64, 378 and 270 fish, respectively. Using estimates of total adult returns to Red River (Table 11), the estimated pond returning fish ranged from 20 to 40% of the total escapement.

This data suggests that wild and natural escapement made up the difference. It appear that Red River Pond was very instrumental in not only returning fish back to the drainage but also in establishing natural spawning populations. Snorkeling trend counts have shown significant increases in densities of juvenile salmon in Red River since the early 1980s. The Nezperce National Forest has put considerable effort into stream rehabilitation projects in Red River during the past decade that has helped to increase habitat diversity for enhancing wild and natural populations.

Table 13. Summary of Red River pond spring chinook mark recoveries, 1977-85.

Brood year	Stock	Date released	Number released	Number tagged (CWT)	Number recovered	Date recovered	Age	Survival rate
1976	Rapid River	Aug. ‘77	350,000	-				
1977	Rapid River	Sept. ‘78	200,000	37,200	2	1981	4	
					4	1982	5	.016%
1978	Rapid River	Sept. ‘79	225,000	45,000	27	1982	4	
					11	1983	5	.084%
1979	Rapid River	Sept. ‘80	265,000	51,000	23	1983	4	
					3	1984	5	.051%
1980	Carson National	Sept. ‘81	268,000	9,000(FB only)	0	1984	4	
					0	1985	5	.000%
1981								
1982	Rapid River	Oct. ‘83	260,000	60,000 (FB)				
		Apr. ‘84	40,000	40,000 (FB)				
1983	Red River	Apr. ‘85	80,000	-				

A P P E N D I C E S

Appendix A

Summary of salmon and steel head fry/fingerlings, smolts and adults released into the Clearwater River drainage between 1971-85.

Table 1. Summary of spring chinook fry, fingerlings and smolts released from Kooskia National Fish Hatchery, 1971 to 1985.

Release year	Number of smolts	Release site	Number of fry or fingerlings	Release site
1971	151,667	Clear Cr.		
	25,403	Lochsa R.		
1972	248,302	Clear Cr.	75,790	Clear Cr.
			327,831	Lochsa R.
			427,831	S.F. Clearwater R.
1973	356,190	Clear Cr.	256,396	Lochsa R.
1974	303,803	Clear Cr.		
1975	802,165	Clear Cr.	1,400	?
1976	1,299,865	Clear Cr.	71,000	Clear Cr.
1977	140,000	Clear Cr.	900,200	Clear Cr.
	360,630	Clearwater R. (Lewiston)		
1978	297,987	Clear Cr.	871,543	Clear Cr.
	73,234	Clearwater R. (Lewiston)		
	64,865	Lochsa R.		
1979	301,029	Clear Cr.	666,544	Clear Cr.
1980	766,946	Clear Cr.		
1981	382,720	Clear Cr.	571,664	Clear Cr.
1982	584,044	Clear Cr.		
1983	244,083	Clear Cr.	217,186	Clear Cr.
1984	299,176	Clear Cr.	56,683	Clearwater R.
	82,377	Dworshak Hatch.	267,406	M.F. Clearwater R.
1985	301,753	Clear Cr.		
TOTALS	7,086,239		4,711,208	

Table 2. Summary of spring chinook fry, fingerlings and smolts released from Dworshak National Fish Hatchery, 1981 to 1985.

Release year	Number of smolts	Release site	Number of fry or fingerlings	Release site
1981	174,517	Clear Cr.		
1982	127,289	Clear Cr.		
	28,100	N. Fk. Clearwater R.		
1983	412,578	Clear Cr.		
	49,055	Main Stem Clearwater R.		
	547,027	N. Fk. Clearwater R.		
1984	221,501	Clear Cr.	153,163	Clear Cr.
	259,589	N. Fk. Clearwater R.	520,889	N.Fk.Clearwater
1985	1,137,139	N. Fk. Clearwater R.	43,000	N.Fk.Clearwater
TOTALS	2,956,795		717,052	

Table 3. Spring chinook fry/fingerlings and smolts released into Lolo Creek drainage, 1972 to 1985.

Year	Release date	Release site	Number of fry/ fingerlings	Number of smolts	Egg source
1972	None				
1973	None				
1974	None				
1975	None				
1976	None				
1977	6/13	Lolo Cr.	104,500 (190/lb)		Rapid River
1978	None				
1979	None				
1980	None				
1981	None				
1982	None				
1983	None				
1984	None				
1985	None				

Table 4. Spring chinook fry/fingerlings and smolts released into the Lochsa River drainage, 1972 to 1985.

Year	Release date	Release site	Number of fry/ fingerlings	Number of smolts	Egg source
1972	4/19	Lochsa R.-Green Flat	122,760		KNFH
	4/19	Post Office Cr.	82,045		KNFH
	4/19	Wendover Cr.	122,760		KNFH
	6/26	Brushy Fork	59,600		Rapid R.
	6/26	Papoose Cr.	14,900		Rapid R.
	6/26	Squaw Cr.	44,700		Rapid R.
	6/26	Post Office Cr.	14,900		Rapid R.
	6/26	Fish Cr.	44,700		Rapid R.
		Subtotal	506,365		
1973	4/10	White Sand Cr.		60,000	Rapid R.
	4/11	Squaw Cr.		30,000	Rapid R.
	4/11	Post Office Cr.		25,000	Rapid R.
	6/5	Post office Cr.	100,000		KNFH
	6/5	Wendover Cr.	100,000		KNFH
	6/5	Lochsa R.-Green Flat	56,396		KNFH
		Subtotal	256,396	115,000	
1974	None				
1975	3/25	White Sand Cr.		48,600 (27/lb)	Rapid R.
	3/26	Boulder Cr.		48,600 (27/lb)	Rapid R.
	3/27	White Sand Cr.		83,600 (27/lb)	Rapid R.
		Subtotal		180,800	
1976	4/27-5/5	White Sand Cr.		166,750 (23/lb)	Rapid R.
1977	4/5-7	White Sand Cr.		183,600	Rapid R.
	6/8-7/19	Brushy Fork Cr.	568,100		Rapid R.
		Crooked Fork Cr.	193,600		Rapid R.
		Subtotal	761,700	183,600	
1978	4/19-25	White Sand Cr.		115,200	Rapid R.
	6/7	Squaw Cr.	119,500		Rapid R.
	6/7	Post Office Cr.	119,500		Rapid R.
	7/6	Crooked Fork Cr.	270,000		Rapid R.
	7/7	Brushy Fork Cr.	270,000		Rapid R.
	8/8	Lochsa R.	148,500		Rapid R.
	8/8	Squaw Cr.	71,500		Rapid R.
		Subtotal	999,000	115,200	
1979	4/18-26	White Sand Cr.	153,362		Rapid R.
1980	None				
1981	None				
1982	None				
1983	None				
1984	None				
1985	None				

Table 5. Chinook fry/fingerlings and smolts released into the South Fork Clearwater drainage (excluding Red River pond), 1972 to 1985.

Year	Release date	Release site	Number of fry/ fingerlings	Number of smolts	Egg source
1972	6/26	Ten Mile Cr.	29,800		Rapid R.
	6/26	American River	44,700		Rapid R.
	6/26	Red River	104,300		Rapid R.
	4/18	Newsome Cr.	126,360		KNFH
	4/18	Red River	298,511		KNFH
	4/18	American River	65,000		KNFH
		Subtotal	668,671		
1973	4/2-3	Red River		120,160	Rapid R.
	4/3	Newsome Cr.		33,772	Rapid R.
	4/3	American River		33,772	Rapid R.
	4/3	Crooked River		9,599	Rapid R.
		Subtotal		197,303	
1974	6/19-20	Ten Mile Cr.	86,000		Rapid R.
	6/19	Newsome Cr.	18,000		Rapid R.
		Subtotal	104,000		
1975	4/9	Newsome Cr.		40,950 (19.5/lb)	Rapid R.
	4/9	Crooked River		40,950 (19.5/lb)	Rapid R.
	4/10	So. Fk. Clearwater R..		11,700 (19.5/lb)	Rapid R.
	4/10	Red River		23,400 (19.5/lb)	Rapid R.
		Subtotal		117,000	
1976	4/13-14	Red River		66,600 (20/lb)	Rapid R.
	4/14	So. Fk. Clearwater R.		30,100 (17/lb)	Rapid R.
	4/14-15	Crooked River		53,100 (20/lb)	Rapid R.
	4/15	Newsome Cr.		56,100 (17/lb)	Rapid R.
		Subtotal		205,300	
1977	3/29	Newsome Cr.		31,500	Rapid R.
	3/29-30	Red River		43,500	Rapid R.
	3/30	Crooked River		63,000	Rapid R.
	3/31-4/2	So. Fk. Clearwater R.		111,750	Rapid R.
		Subtotal		249,750	
1978	4/25	Red River		33,600	Rapid R.
	7/11	Newsome Cr.	76,500		Rapid R.
	7/11	Ten Mile Cr.	103,500		Rapid R.
		Subtotal	180,000	33,600	
1979	4/24	Newsome Cr.		44,373	Rapid R.
1980	None				
1981	None				
1982	None				
1983	None				
1984	None				
1985	None				

Table 6 . Releases of steelhead smolts from DNFH Into the Clearwater River drainage during 1981.

Date	Release Site	Number released	Number per pound	Egg source
4/27	So. Fk. Clearwater (Mt. Idaho)	215,675	9.2	DNFH
4/28	So. Fk. Clearwater (Mt. Idaho)	145,362	8.3	DNFH
4/29	So. Fk. Clearwater (Mt. Idaho)	72,435	8.2	DNFH
	Subtotal	433,472		
4/29	Clear Cr. (KNFH)	73,213	8.1	DNFH
4/22	Clearwater Mainstem (DNFH)	228,162	8.8	DNFH
4/23	Clearwater Mainstem (DNFH)	110,984	8.6	DNFH
4/23	Clearwater Mainstem (DNFH)	92,882	11.5	DNFH
4/24	Clearwater Mainstem (DNFH)	65,287	9.1	DNFH
4/29	Clearwater Mainstem (DNFH)	216,869	8.4	DNFH
4/30	Clearwater Mainstem (DNFH)	291,724	9.2	DNFH
5/4	Clearwater Mainstem (DNFH)	61,204	9.4	DNFH
5/4	Clearwater Mainstem (DNFH)	72,848	8.4	DNFH
5/4	Clearwater Mainstem (DNFH)	76,953	8.9	DNFH
5/5	Clearwater Mainstem (DNFH)	233,721	9.0	DNFH
5/6	Clearwater Mainstem (DNFH)	241,892	9.4	DNFH
5/7	Clearwater Mainstem (DNFH)	237,521	10.6	DNFH
5/18	Clearwater Mainstem (DNFH)	196,029	19.9	DNFH
6/30	Clearwater Mainstem (DNFH)	46,403	31.2	DNFH
	Subtotal	2,245,692		
	TOTAL	2,679,164		

Table 7. Releases of steelhead smolts from DNFH into the Clearwater River drainage during 1982.

Date	Release site	Number released	Number per pound	Egg source
5/4	So.Fk. Clearwater (Mt. Idaho)	137,875	6.7	DNFH
5/5	So.Fk. Clearwater (Mt. Idaho)	104,416	7.3	DNFH
5/6	So.Fk. Clearwater (Mt. Idaho)	139,520	7.4	DNFH
	Subtotal	381,811		
4/5	Clearwater Mainstem (DNFH)	148,370	7.1	DNFH
4/12	Clearwater Mainstem (DNFH)	137,786	6.6	DNFH
4/19	Clearwater Mainstem (DNFH)	36,778	8.0	DNFH
4/19	Clearwater Mainstem (DNFH)	34,001	7.1	DNFH
4/21	Clearwater Mainstem (DNFH)	70,709	6.6	DNFH
4/21	Clearwater Mainstem (DNFH)	215,986	9.2	DNFH
4/22	Clearwater Mainstem (DNFH)	312,987	9.6	DNFH
4/22	Clearwater Mainstem (DNFH)	37,104	7.6	DNFH
4/23	Clearwater Mainstem (DNFH)	148,526	7.8	DNFH
4/30	Clearwater Mainstem (DNFH)	36,630	7.3	DNFH
5/3	Clearwater Mainstem (DNFH)	121,510	8.6	DNFH
5/3	Clearwater Mainstem (DNFH)	61,885	6.1	DNFH
5/3	Clearwater Mainstem (DNFH)	69,625	7.6	DNFH
5/6	Clearwater Mainstem (DNFH)	6,613	6.2	DNFH
5/7	Clearwater Mainstem (DNFH)	67,980	7.1	DNFH
5/10	Clearwater Mainstem (DNFH)	135,244	7.4	DNFH
5/11	Clearwater Mainstem (DNFH)	34,478	7.3	DNFH
5/12	Clearwater Mainstem (DNFH)	208,892	8.2	DNFH
5/14	Clearwater Mainstem (DNFH)	36,707	10.2	DNFH
5/17	Clearwater Mainstem (DNFH)	35,577	8.8	DNFH
5/17	Clearwater Mainstem (DNFH)	34,797	8.1	DNFH
5/19	Clearwater Mainstem (DNFH)	37,031	7.6	DNFH
5/21	Clearwater Mainstem (DNFH)	72,103	7.8	DNFH
5/28	Clearwater Mainstem (DNFH)	7,000	7.4	DNFH
	Subtotal	2,108,319		
4/19	Direct barge Lewiston-Bonneville	74,036	8.0	DNFH
4/30	Direct barge Lewiston-Bonneville	36,767	7.3	DNFH
5/19	Direct barge Lewiston-Bonneville	36,662	7.6	DNFH
5/31	Direct barge Lewiston-Bonneville	36,955	8.0	DNFH
	Subtotal	184,420		
	TOTAL	2,674,550		

Table 8. Releases of steelhead adults and smolts from DNFH into the Clearwater, Boise, Payette, Salmon and Snake River drainages during 1983.

Date	Release Site	Number released	Number per pound	Egg source
3/11	Boise River	180	Adults	DNFH
3/11	Payette River	180	Adults	DNFH
3/29	Slate Cr. (Salmon R.)	30	Adults	DNFH
4/5	Slate Cr. (Salmon R.)	141	Adults	DNFH
2/17	Snake River (Lewiston)	230	Adults	DNFH
2/24	Snake River (Lewiston)	381	Adults	DNFH
4/12	Lolo Cr.	150	Adults	DNFH
4/15	Potlatch Cr.	81	Adults	DNFH
4/19	Potlatch Cr.	71	Adults	DNFH
	Total Adults	1,444		
5/11	Clear Cr. (KNFH)	94,530	6.5	DNFH
5/12	Clear Cr.(KNFH)	97,239	6.5	DNFH
5/13	Clear Cr. KNFH)	58,659	7.0	DNFH
	Subtotal	250,428		
5/9	So.Fk .Clearwater (Mt. Idaho)	101,289	6.8	DNFH
5/10	So.Fk. Clearwater (Mt. Idaho)	104,685	6.7	DNFH
5/11	So.Fk. Clearwater (Mt. Idaho)	96,734	6.5	DNFH
5/12	So.Fk. Clearwater (Mt. Idaho)	91,676	5.8	DNFH
5/13	So.Fk. Clearwater (Mt. Idaho)	101,087	6.6	DNFH
	Subtotal	496,471		
4/12	Clearwater Mainstem (DNFH)	125,036	30.0	DNFH
4/13	Clearwater Mainstem (DNFH)	36,150	7.1	DNFH
4/20	Clearwater Mainstem (DNFH)	33,854	6.8	DNFH
5/3	Clearwater Mainstem (DNFH)	35,931	5.4	DNFH
5/3	No.Fk. Clearwater (DNFH)	35,177	6.2	DNFH
5/4	Clearwater Mainstem (DNFH)	238,361	6.8	DNFH
5/5	Clearwater Mainstem (DNFH)	179,581	6.5	DNFH
5/9	Clearwater Mainstem (DNFH)	69,651	7.0	DNFH
5/11	Clearwater Mainstem (DNFH)	29,938	8.7	DNFH
5/12	Clearwater Mainstem (DNFH)	30,215	9.4	DNFH
5/13	Clearwater Mainstem (DNFH)	91,296	7.6	DNFH
5/16	Clearwater Mainstem (DNFH)	82,106	8.5	DNFH
5/18	Clearwater Mainstem (DNFH)	99,663	5.7	DNFH
5/19	Clearwater Mainstem (DNFH)	40,914	6.6	DNFH
5/23	Clearwater Mainstem (DNFH)	23,974	8.6	DNFH
5/25	Clearwater Mainstem (DNFH)	48,328	8.3	DNFH
5/25	Clearwater Mainstem (DNFH)	33,124	5.7	DNFH
5/26	Clearwater Mainstem (DNFH)	152,849	8.4	DNFH
	Subtotal	1,386,148		
4/20	Direct barge Lewiston-Bonneville	65,665	6.0	DNFH
5/3	Direct barge Lewiston-Bonneville	36,205	5.6	DNFH
5/24	Direct barge Lewiston-Bonneville	35,006	6.2	DNFH
	Subtotal	136,876		
	TOTAL Clearwater Smolts	2,270,367		

Table 9. Releases of steelhead smolts from DNFH into the Clearwater River drainage during 1984.

Date	Release Site	Number released	Number per pound	Egg source
5/1	Red River	44,659	5.5	DNFH
5/3	Red River	16,116	5.8	DNFH
5/4	Red River	15,997	5.8	DNFH
5/2	Crooked River	15,850	5.5	DNFH
5/4	Crooked River	22,273	5.8	DNFH
5/2	American River	69,829	5.5	DNFH
5/5	American River	23,523	5.2	DNFH
5/2	Newsome Cr.	23,742	5.5	DNFH
5/4	Newsome Cr.	22,274	5.8	DNFH
5/5	Newsome Cr.	23,825	5.2	DNFH
	Subtotal	278,088		
4/30	So.Fk.Clearwater (Mt. Idaho)	115,766	4.9	DNFH
5/1	So.Fk.Clearwater (Mt. Idaho)	66,988	5.5	DNFH
5/2	So.Fk.Clearwater (Mt. Idaho)	46,088	5.5	DNFH
	Subtotal	228,842		
5/3	Clear Cr. (KNFH)	246,123	5.5	DNFH
	Subtotal	246,123	5.5	
4/23	Clearwater Mainstem (DNFH)	140,049	5.8	DNFH
4/25	Clearwater Mainstem (DNFH)	159,555	5.7	DNFH
5/4	Clearwater Mainstem (DNFH>	654,596	6.2	DNFH
5/7	Clearwater Mainstem (DNFH)	254,119	6.3	DNFH
	Subtotal	1,208,319		
	TOTAL	1,961,372		

Table 10. Steelhead fry, smolts and adults released into the Lochsa River drainage, 1973 to 1985. All fish were of DNFH origin.

Year	Release date	Release site	Number of fry	Number of smolts	Number of adults
1973	5/15	Lochsa River		1,200 (11/lb)	
	6/12	Brushy Fork Cr.	374,195		
	6/12	Crooked Fork Cr.	374,195		
		Subtotal	748,390	1,200	
1974	5/13-16	Lochsa River			697
	7/2	Post Office Cr.	50,000		
	7/2	Squaw Cr.	100,000		
	7/2	Papoose Cr.	100,000		
	7/2	White Sand Cr.	100,000		
		Subtotal	350,000		697
1975			0		
1976			0		
1977	6/23	Post Office Cr.	90,000		
	6/24	Weir Cr.	90,000		
	6/24	Deadman Cr.	90,000		
		Subtotal	270,000		
1978	6/12	Pete King Cr.	150,000		
	6/12	Canyon Cr.	150,000		
	6/12	Deadman Cr.	300,000		
	6/13	Spruce Cr.	300,000		
	6/14	Squaw Cr.	150,000		
	6/15	Post Office Cr.	150,000		
	6/16	Shotgun Cr.	300,000		
	6/16	Papoose Cr.	200,000		
		Subtotal	I ,700,000		
1979	6/11	Pete King Cr.	80,000		
	6/11	Fish Cr.	80,000		
	6/11	Post Office Cr.	80,000		
	6/11	Squaw Cr.	80,000		
	6/11	Badger Cr.	41,000		
	6/11	Crooked Fork	80,000		
	6/21	Brushy Fork	350,000		
	6/21	Pack Creek	50,000		
		Subtotal	841,000		
1980	4/11-19	Lochsa River			445
	6/17	Lochsa River	500,000		
	7/7	Brushy Fork Cr.	314,985		
	9/24	White Sands Cr.	45,000		
	9/25	Pete King Cr.	30,000		
	9/24	Fish Cr.	20,000		
	9/24	Post Office Cr.	30,000		
	9/24	Squaw Cr.	25,000		
	9/24	Badger Cr.	23,000		
	9/24	Papoose Cr.	20,000		
		Subtotal	1,007,985		445

Table 10. Continued.

Year	Release date	Release site	Number of fry	Number of smolts	Number of adults
1981	3/25-26	Post Office Cr.			162
	3/31	Squaw Cr.			86
	6/2	Squaw Cr.	240,000		
	6/8	Papoose Cr.	340,000		
	6/9	Pete King	140,500		
	6/9	Post Office	140,500		
	6/15	Brushy Fork	60,000		
	6/15	Badger Cr.	60,000		
	6/22	White Sand Cr.	356,000		
	6/29	Brushy Fork Cr.	250,000		
		Subtotal	1,587,000		248
1982	6/16	Pete King Cr.	58,000		
	6/16	Squaw Cr.	100,000		
	6/16	Badger Cr.	58,000		
		Subtotal	216,000		
1983			NONE		
1984			NONE		
1985			NONE		

Table 11. Steelhead fry, smolts and adults released into the South Fork of the Clearwater drainage, 1971 to 1985. All fish were of DNFH origin.

Year	Release date	Release site	Number of fry	Number of smolts	Number of adults
1971	7/14	Crooked R.	256,000		
		Subtotal	256,000		
1972			NONE		
1973	4/20-5/3	So.Fk. Clearwater drainage	1,365,000 (55/lb)		
	10/25	So.Fk. Clearwater	217,800		
		Subtotal	1,582,800		
1974	7/1	Mill Cr.	100,000		
	7/1	Newsome Cr.	100,000		
	7/1	Crooked River	200,000		
		Subtotal	400,000		
1975			NONE		
1976			NONE		
1977	6/3	Meadow Cr.	712,000		
	6/9	Red River	275,000		
	6/9	Crooked River	275,000		
	6/27	So.Fk. Clearwater	330,000		
	6/29	Ten Mile Cr.	300,000		
		Subtotal	1,892,000		
1978	4/17	So.Fk. Clearwater			800
	4/21	Newsome Cr.			400
	4/27	Newsome Cr.			272
	4/28	Crooked River			200
	5/1	Red River			350
	5/3	Crooked River			460
	6/6	Meadow Cr.	500,000		
	6/7	Leggett Cr.	100,000		
	6/7	Crooked River	300,000		
	6/7	Newsome Cr.	125,000		
		Subtotal	1,025,000		2,482
1979	4/12	Newsome Cr.			250
	6/4	Meadow Cr.	280,000		
	6/18	Leggett Cr.	100,000		
	6/18	Newsome Cr.	100,000		
	6/18	Crooked River	100,000		
	6/18	Red River	100,000		
	6/18	American River	100,000		
	6/25	Johns Cr.	420,000		
		Subtotal	1,200,000		250

Table 11. Continued.

Year	Release date	Release site	Number of fry	Number of smolts	Number of adults
1980	6/18	So.Fk. Clearwater	500,000		
	7/3	Meadow Cr.	271,400		
		Subtotal	771,400		
1981	4/27	So.Fk. Clearwater (Mt. Idaho)		215,675	
	4/28	So.Fk. Clearwater (Mt. Idaho)		145,362	
	4/29	So.Fk. Clearwater (Mt. Idaho)		72,435	
		Subtotal		433,472	
	5/27	Leggett Cr.	30,000		
	5/27	Newsome Cr.	100,000		
	5/27	Crooked River	100,000		
	5/28	Red River	100,000		
	5/28	American River	100,000		
		Subtotal	430,000		
1982	5/4	So.Fk. Clearwater (Mt. Idaho)		137,875	
	5/5	So.Fk. Clearwater (Mt . Idaho)		104,416	
	5/6	So.Fk. Clearwater (Mt. Idaho)		139,520	
		Subtotal		381,811	
1983	5/9	So.Fk. Clearwater (Mt. Idaho)		101,289	
	5/10	So.Fk. Clearwater (Mt. Idaho)		104,685	
	5/11	So.Fk. Clearwater (Mt. Idaho)		96,734	
	5/12	So.Fk. Clearwater (Mt. Idaho)		92,676	
	5/13	So.Fk. Clearwater (Mt. Idaho)		101,087	
		Subtotal		496,471	
1984	4/30	So.Fk. Clearwater (Mt. Idaho)		115,766	
	5/1	So.Fk. Clearwater (Mt. Idaho)		66,988	
	5/2	So.Fk. Clearwater (Mt. Idaho)		46,088	
		Subtotal		228,842	
1985	4/29-30	American River		138,077	
	5/1	American River		24,034	
	4/29-30	Crooked River		18,508	
	5/1	Crooked River		15,962	
	5/1	Crooked River		7,765	
	5/1-2	Newsome Cr.		95,286	
		Subtotal		299,632	

Table 12. Steelhead smolt is released Into Clear Creek, 1978 to 1985. All fish were of DNFH origin.

Year	Release date	Release site		Number of smolts	Number per pound
1978	4/11	Clear Cr.		176,714	11.0
	4/19	Clear Cr.		9,800	9.8
			Subtotal	186,514	
1979					
1980					
1981	4/29	Clear Cr.		73,213	8.1
			Subtotal	73,213	
1982					
1983	5/11	Clear Cr.		94,530	6.5
	5/12	Clear Cr.		97,239	6.5
	5/13	Clear Cr.		58,659	7.0
			Subtotal	250,428	
1984	5/3	Clear Cr.		246,123	5.5
			Subtotal	246,123	
1985	4/30-5/1	Clear Cr.		145,206	9.3
			Subtotal	145,206	

Table 13. Steelhead fry, smolts and adults released into the Lolo Creek drainage, 1974-1985. All fish were of DNFH origin.

Year	Release date	Release site	Number of fry	Number of smolts	Number of adults
1974	12/4	Musselshell Cr.	230,335 (76/lb)		
	5/8	Musselshell Cr.		101,995	
	5/9	Lolo Cr.			400
	5/10	Lolo Cr.			407
		Subtotal	230,335	101,995	807
1975					
1976					
1977	6/10	Lolo Cr.	300,000		
		Subtotal	300,000		
1978	4/6	Lolo Cr.			600
	4/20	Lolo Cr.			800
	6/5	Lolo Cr.	520,000		
		Subtotal	520,000		1,400
1979	6/11	Lolo Cr.	379,236		
		Subtotal	379,236		
1980	4/26	Lolo Cr.			165
	5/15	Lolo Cr.	100,000		
	9/25	Lolo Cr.	40,000		
		Subtotal	140,000		165
1981					
1982					
1983	4/12	Lolo Cr.			150
	5/26	Eldorado Cr.	625,000		
		Subtotal	625,000		150
1984					
1985	4/17-19	Eldorado Cr.			1,150
	4/29-30	Eldorado Cr.		76,348	
	5/1	Eldorado Cr.		44,936	
		Subtotal		121,284	1,150

Table 14. Steelhead fry, smolts and adults released into the Potlatch Creek drainage, 1977 to 1985. All fish were of DNFH origin.

Year	Release date	Release site	Number of fry	Number of smolts	Number of adults
1977	5/19	E.Fk. Potlatch Cr.	186,192		
	6/30	E.Fk. Potlatch Cr.	170,000		
	6/30	Potlatch	175,000		
		Subtotal	531,192		
1978	4/24	Potlatch Cr.			200
	4/5	Potlatch Cr.			280
		Subtotal			480
1979	5/4	Potlatch Cr.	170,000		
		Subtotal	170,000		
1980	5/14	Potlatch Cr.	125,000		
		Subtotal	125,000		
1981	5/26	E.Fk. Potlatch Cr.	100,000		
		Subtotal	100,000		
1982					
1983	4/15	Potlatch Cr.			81
	4/19	Potlatch Cr.			71
		Subtotal			152
1984					
1985	3/27	Cedar Cr.			402
	3/28	E.Fk. Potlatch Cr.			383
	4/3	Little Boulder Cr.			408
					1,193

Appendix B

Summary of salmon and steelhead eyed eggs placed into the Clearwater River drainage between 1961-80.

Eyed Egg Plants, 1961-1980

Spring Chinook

The initial reintroduction of spring chinook in the Clearwater River drainage began in 1961 when eyed spring chinook eggs were placed in trenches dug in the gravel in the Selway River above the Little Clearwater River and in Bear Creek. From 1961-1964, a total of 3,741,864 eyed eggs from Salmon River spring Chinook were placed 1n the Selway Way River. During the same time interval, 3,569,000 eyed spring chinook eggs from the Carson National Hatchery were placed in Bear Creek (Table 1) .

In 1964, an incubation channel was constructed on Running Creek, another Selway River tributary. From 1964-1969, a total of 2,445,257 eyed spring chinook eggs from the Carson National Hatchery were placed in the Running Creek channel. In 1970, the last year the channel was used, 500,714 eyed eggs from Rapid River Hatchery were used. Emergence percentages .during the years fry were enumerated ranged from 18 to 79% (Table 2).

In 1966, another Selway tributary incubation channel was constructed on Ditch Creek. From 1966-1968, a total of 1,703,590 eyed spring chinook eggs from Carson National Hatchery were placed in the Ditch Creek channel. In 1970, the last year the channel was used, 550,600 eyed eggs from Rapid River Hatchery were planted. Emergence percentages during the three years of enumeration ranged from 26 to 100% (Table 3).

An incubation channel was also constructed at Indian Creek, another Selway River tributary, in 1966. From 1966 to 1979, a total of 28,330,655 eyed spring chinook eggs were placed in the channel. A total of 11,136,142 fry were enumerated from the channel during the interval of 1966-1978. Emergence percentage ranged from 17 to 74% and averaged 44% (Table 4). Fry were distributed to various locations in the Selway drainage (Tables 5-15) .

Red River Incubation Channel was originally constructed in 1964 and utilized for incubation of steel head and coho eggs from 1964-1969, but was used for spring chinook eggs from 1970-1976. During five years, a total of 5,159,345 eyed spring chinook eggs were planted. No eggs were available for this channel in 1971 and 1974 (Table 16) . Emergent fry migrated directly into Red River without enumeration (Table 17).

Crooked River Incubation Channel was originally constructed in 1966 and utilized for coho and steelhead eggs from 1966-1968, but was used for spring chinook eggs from 1970-1978. The channel was filled in and leveled with a bulldozer 1n 1979. From 1970-1978 a total of 9,323,468 eyed spring chinook eggs were placed in the channel (Table 18). No eggs were available in 1974. Some limited fry trapping and distribution to Newsome Creek occurred in 1971, 1972 and 1974 (Table 19).

Totaling all five channels, plus the eggs placed in the Selway River and Bear Creek, approximately 55,000,000 eyed spring chinook eggs were planted in the Clearwater Drainage between 1961 and 1980.

Coho

Red River Incubation Channel utilized a total of 2,780,250 eyed coho eggs in 1963, 1964, and 1965. Emergence percentages ranged from 55 to 59.7% (Table 17).

Crooked River Incubation Channel utilized a total of 8,066,000 eyed coho, eggs in 1966, 1967 and 1968. Emergence percentages ranged from 16 to 26%. The coho program was terminated in 1969 (Table 19).

Steelhead

Red River Incubation Channel utilized a total of 3,738,874 steelhead eggs from 1962-1969. All eggs were taken at the old Lewiston Dam (Table 16). Emergence percentages ranged from 74 to 85% (Table 17). From 1970-1976, the channel was used for spring chinook eggs. During 1978 and 1979, steelhead eggs were again placed in the channel (Table 16).

In 1966, a total of 480,598 steelhead eggs were placed in Crooked River Channel (Table 18). The emergence percentage that year was 91% (Table 19). This was the only year steelhead eggs were placed in this channel.

Fall Chinook

An incubation channel near Fenn Ranger Station on the lower Selway River was utilized for fall chinook eyed eggs from 1960-1967. During that time, a total of 6,733,000 eyed eggs were planted. These eggs were obtained from Spring Creek Hatchery on the lower Columbia River. No eggs were available in 1965. Due to poor adult returns, the program was terminated in 1968 (Table 20).

Table 1. Summary of spring Chinook eyed egg plants into the upper Selway River and Bear Creek, 1961-1964.

Year	Location planted	Number of eggs planted	Eqq source
1961	Selway River above Little Clearwater	845,000	Salmon River
	Bear Creek	610,000	Carson National
1962	Seaway River above Little Clearwater	1,111,000	Salmon River
	Bear Creek	959,000	Carson National
1963	Selway River above Little Clearwater	860,000	Salmon River
	Bear Creek	1,000,000	Carson National
1964	Selway River above Little Clearwater	925,864	Salmon River
	Bear Creek	1,000,000	Carson National

Table 2. Summary of spring chinook eyed egg plants and emergent fry, Running Creek Incubation Channel, 1964-1970.

Year	Number of eggs planted	Number of fry emerging	Percent emergence	Egg source
1964	285,162	--	--	Adults trapped at Bonneville
1965	634,943	156,307	55	and eggs taken at Carson
1966	405,400	200,000	31	National Hatchery
1967	427,300	73,028[1]/	18	" "
1968	450,000	159,000[1]/	37	" "
1969	242,453	353,097	79	" "
1970	500,714	Not enumerated		Rapid River
1971		Not enumerated		
Total	2,945,972			

The channel was constructed in 1964 and egg plants were discontinued in 1971.

[1]/Flooding and/or debris problems at headgate.

Table 3. Summary of spring chinook eyed egg plants and emergent fry, Ditch Creek Incubation Channel, 1966-1970.

Year	Number of eggs planted	Number of fry emerging	Percent emergence	Egg source
1966	612,800			Carson National (adults trapped at Bonneville)
1967	589,000	594,337	97	" "
1968	501,790	598,000	100+	" "
1969	None	130,033	26	
1970	550,600	--	--	Rapid River
1971	None	Not enumerated		
Total	2,254,190			

The channel was constructed in 1966 and egg plants were discontinued in 1971.

Table 4. Summary of spring Chinook eyed egg plants and emergent fry, Indian Creek Incubation Channel, 1966-1979.

Year	Number of eggs planted	Number of fry emerging	Percent emergence	Egg source
1966	1,010,487			Salmon River (Bear Valley, Decker, Lemhi)
1967	998,160	424,623	42	Salmon River
1968	2,729,100	743,000	74	Salmon River
1969	1,125,136	1,221,696	45	Salmon River and Carson Natl.
1970	2,215,941	405,682	36	Rapid River
1971	1,623,080	839,716	38	Carson National
1972	2,956,179	524,710	32	Rapid River
1973	2,029,316	1,613,550	55	Rapid River
1974	2,207,000	962,335	48	Cowlitz Hatchery
1975	2,406,731	770,000	35	Rapid River
1976	1,613,383	400,000	17	Rapid River
1977	2,740,470	723,960	45	Rapid River
1978	2,135,672	1,458,980	53	Rapid River
1979	2,540,000	1,047,890	49	Cowlitz Hatchery

Table 5. Indian Creek Hatching Channel spring chinook fry distribution, 1969.

Release dates	Water	Release site	Number of fry
May 13	Selway River	Magruder R.S.	39,500
May 14	Selway River	Magruder R.S.	23,000
May 20	Deep Creek	Scattered locations	59,500
May 24	Selway River	Magruder R.S.	71,500
May 27	Deep Creek	Scattered locations	123,000
June 2	Selway River	Paradise G.S.	250,000
June 4	Selway River	Paradise G.S.	46,000
June 4	White Cap Creek	5 miles up	109,000
June 7	Selway River	Magruder R.S.	44,500
June 9	White Cap Creek	10 miles up	126,000
June 9	Selway River	Paradise G.S.	103,000
June 19	Selway River	Paradise G.S.	10,000
June 19	White Cap Creek	15 miles up	90,000
April-June	Selway River	At the channel	126,696
		Approximate total	1,221,696

Table 6. Indian Creek Hatching Channel spring chinook fry transplants, 1970.

Release dates	Water	Release site	Number of fry
May 20	Selway River	Magruder R.S.	25,800
June 3	Deep Creek	At Scimitar Creek	15,280
June 3	Deep Creek	At Hell's Half Acre Bridge	16,160
June 10	Selway River	Beaver Point	15,825
June 10	White Cap Creek	Paradise G.S.	15,300
June 24	Storm Creek	Storm Creek Flat	76,160
June 24	White Cap Creek	Cooper Flat	76,160
June 24	Selway River	Beaver Point	13,680
June 24	Selway River	Magruder R.S.	13,680
May-June	Selway River	At Channel	107,637
		Approximate Total	375,682

Table 7. Chinook salmon fry transplants from Indian Creek Hatching Channel, 1971.

Release dates	Water	Release site	Number of fry
May 27	Selway River	Beaver Point	76,456
May 29	White Cap Creek	Paradise G.S.	112,044
June 4	Selway River	Magruder R.S.	50,687
June 10	Deep Creek	Cayuse Creek	63,634
June 17	Selway River	Magruder R.S.	134,005
June 22	Storm Creek	Storm Creek Flat	104,880
June 24	Storm Creek	Storm Creek Flat	110,400
June 25	White Cap Creek	Paradise G.S.	104,448
July 3	Selway River	Beaver Point	83,162
		Approximate Total	839,716

Table 8. Indian Creek Hatching Channel spring chinook fry transplants, 1972.

Release dates	Water	Release site	Number of fry
June 2	White Cap Creek	Paradise G.S.	21,660
June 2	Selway River	Magruder R.S.	21,280
June 6	Selway River	Beaver Point	24,320
June 6	Deep Creek	Scimitar Creek	24,320
June 6	Deep Creek	Cayuse Creek	30,400
June 6	Selway River	Magruder Crossing	24,320
June 12	White Cap Creek	Paradise G.S.	31,680
June 12	Deep Creek	Hell's Half Acre	22,140
June 20	Selway River	Magruder Crossing	38,000
June 20	Selway River	Magruder Mountain	38,000
June 20	White Cap Creek	Cooper's Flat	50,400
June 27	Deep Creek	Gabe Creek	35,700
June 27	Storm Creek	Storm Creek Flat	107,665
June 30	Moose Creek		54,825
		Approximate Total	524,710

Table 9. Indian Creek Hatching Channel Chinook fry transplants through June 20, 1973.

Release dates	Water	Release site	Number of fry
May16	Selway River	Beaver Point	47,250
May16	Selway River	Magruder R.S.	48,600
May18	Storm Creek	Storm Creek Fiat	200,000
May18	White Cap Creek	Cooper's Flat	180,000
May18	Selway River	Washout Creek	16,000
May18	Selway River	Beaver Point	36,000
May 24	Moose Creek	Elbows Bend	146,200
May 24	Selway River	Beaver Point	36,000
May 26	White Cap Creek	Paradise G.S.	63,000
May 26	Deep Creek	Gabe Creek	69,300
May 27	Deep Creek	Kit Carson	50,400
May 28	White Cap Creek	Paradise G.S.	37,800
May 29	Selway River	Magruder R.S.	53,650
May 29	Selway River	Magruder Crossing	50,400
June 2	White Cap Creek	Paradise G.S.	75,600
June 2	Selway River	Magruder Crossing	50,400
June 2	Selway River	Beaver Point	63,000
June 3	Selway River	Magruder R.S.	50,400
June 3	Deep Creek	Scimitar Creek	78,750
June 5	Deep Creek	Kit Carson	44,100
June 6	Selway River	Beaver Point	50,500
June 6	Selway River	Magruder R.S.	34,650
June 9	White Cap Creek	Paradise G.S.	40,950
June 9	Selway River	Magruder R.S.	12,600
June 9	Deep Creek	Gabe Creek	31,500
June 9	Deep Creek	Scimitar Creek	22,050
June 9	Deep Creek	Kit Carson	9,450
June 11	Selway River	Magruder R.S.	46,000
		Approximate Total	1,644,550

Table 7. Length frequency of adult chinook measured at Red River weir and recovered on spawning ground survey on Red River during 1985.

Fork length (Inches)	Number of fish	Percent of total	Age class breakdown
15			
16			
17	1	0.5	Jacks
18	1	0.5	Total = 2
19			Percent = 1.0
20			
21			
22			
23			4-Year Old
24	3	1.4	Total = 33
25	1	0.5	Percent = 15.6
26	6	2.9	
27	2	1.0	
28	6		
29	7	3.3	
30	3	1.4	
31	1	0.5	
32	4	1.9	
33	3	1.4	
34	21	10.0	5-Year Old
35	17	8.1	Total = 176
36	30	14.3	Percent = 83.4
37	29	13.8	
38	18	8 .6	
39	15	7.1	
40	15	7.1	
41	11	5.2	
42	12	5.7	
43	3	1.4	
44	2	0.5	
45			
	211		

Table 10. Indian Creek Hatching Channel chinook fry transplants, 1972.

Release dates	Water	Release site	Number of fry
May 9	White Cap Creek	Paradise G.S.	50,000
May 9	Selway River	Magruder R.S.	50,000
May10	Deep Creek	Pete Creek	50,000
May13	Selway River	Beaver Point	50,000
May13	Deep Creek	Gabe Creek	50,000
May23	Wilkerson Creek	Storm Creek	100,000
May 24	White Cap Creek	Cooper's Flat	40,000
May 30	White Cap Creek	3 miles above Cooper's Flat	100,000
May 30	Moose Creek	4 miles above Elbows Bend	90,000
June, 11	Deep Creek	Scimitar Creek	43,050
May & June	Selway River	At hatching channel	339,285
		Approximate Total	962,335

Table 11. Indian Creek Hatching Channel chinook fry transplants, 1975.

Release dates	Water	Release site	Number of fry
May 29	Storm Creek	Storm Creek Flat	77,435
May 29	Selway River	Magruder Crossing	9,265
June 4	White Cap Creek	Cooper's Flat	84,000
June 4	Selway River	Magruder R.S.	12,000
June 17	Deep Creek	Hell's Half Acre Bridge	16,300
June 26	Deep Creek	Pete Creek	19,000
July 5	Selway River	Magruder Crossing	7,000
May & June	Selway River	At hatching channel	84,000
		Approximate Total	309,000

Table 12. Indian Creek Hatching Channel chinook fry transplants, 1976.

Release dates	Water	Release site	Number of fry
May 21	White Cap Creek	Paradise	30,240
May 21	Selway River	Beaver Point	40,320
May 21	Selway River	Magruder Crossing	44,640
May 21	Deep Creek	Cayuse Creek	10,080
May 21	Selway River	Magruder R.S.	44,550
May 28	Storm Creek	Storm Creek Flat	62,910
May 28	White Cap Creek	Cooper's Flat	66,060
May & June	Selway River	At hatching channel	53,220
		Approximate Total	352,020

Table 13. Indian Creek Hatching Channel chinook fry transplants, 1977.

Release dates	Water	Release site	Number of fry
May 15	Selway River	At hatching channel	76,840
May 20	Selway River	Magruder Crossing	36,770
May 24	White Cap Creek	Paradise	60,920
May 30	Deep Creek	Cayuse Creek	31,514
May 30	Deep Creek	Gabe Creek	31,514
May 30	Selway River	Magruder R.S.	31,514
June 1	Selway River	Magruder Crossing	12,960
June 4	Selway River	Beaver Point	31,280
June 4	Selway River	Magruder Crossing	31,280
June 6	Selway River	At hatching channel	10,500
June 7	White Cap Creek	Cooper's Flat	82,600
June 7	Storm Creek	Storm Creek Flat	82,600
June 7	Selway River	At hatching channel	42,000
June 14	Selway River	Magruder Crossing	33,000
June 14	Selway River	Beaver Point	33,000
June 14	Selway River	Magruder R.S.	11,900
June 20	Selway River	At hatching channel	6,700
		Approximate Total	646,892

Table 14. Indian Creek Hatching Channel chinook fry transplants, 1978.

Release dates	Water	Release site	Number of fry
April 27	Selway River	At hatching channel	26,480
May 4	Selway River	Magruder Crossing	28,600
May 4	Selway River	Beaver Point	28,600
May 4	White Cap Creek	Paradise	28,600
May 7	Deep Creek	Below Cayuse Creek	28,600
May 7	Deep Creek	CCC Camp	28,600
May 7	Selway River	Magruder R.S.	28,600
May 11	Selway River	Magruder R.S.	34,000
May 11	Selway River	Magruder Crossing	34,000
May 12	White Cap Creek	Paradise	30,600
May 14	Deep Creek	Cayuse Creek	42,500
May 14	Deep Creek	Hell's Half Acre Bridge	42,500
May 15	Selway River	At hatching channel	83,600
May 16	White Cap Creek		34,000
May 16	Snake Creek		34,000
May 18	Selway River	Magruder R.S.	34,000
May 18	Deep Creek	CCC Camp	34,000
May 20	Selway River	Beaver Point	34,000
May 20	Selway River	Magruder Crossing	34,000
May 24	Selway River	Magruder Crossing	51,000
May 24	Selway River	Magruder R.S.	51,000
May 24	White Cap Creek	Paradise	34,000
May 31	White Sand Creek	White Sand Creek Bridge	42,500
May 31	Lochsa River	Mouth of Brushy Fork Ck	42,500
May 31	Selway River	Magruder Crossing	68,000
May 31	Selway River	Beaver Point	68,000
June 1	White Cap Creek	Paradise	51,000
June 1	Selway River	Magruder R.S.	68,000
June 3	White Cap Creek	Paradise	68,000
June 3	Deep Creek	Kit Carson	68,000
June 3	Deep Creek	CCC Camp	68,000
June 5	Selway River	At hatching channel	69,700
June 11	Selway River	At hatching channel	40,000
		Approximate Total	1,458,980

Table 15. Indian Creek Hatching Channel chinook fry transplants into the Selway River drainage, 1979.

Release dates	Water	Release site	Number of fry
April 23 - May 11	Selway River	At hatching channel	35,475
May 14	Selway River	Beaver Point	20,150
May 15	Selway River	Magruder R.S.	20,150
May 16	Snake Creek		18,060
May 17	Deep Creek	Cayuse Creek	50,400
May 18	Selway River	Deep Creek	36,960
May 19	White Cap Creek		16,800
May 21	White Cap Creek	Paradise	33,600
May 23	Selway River	Beaver Point	67,200
May 24	Selway River	Magruder R.S.	35,200
May 25	White Cap Creek	Paradise	13,400
May 29	Deep Creek	CCC Camp	67,200
May 31	Selway River	Deep Creek	15,200
June 2	Selway River	Magruder Crossing	41,280
June 3	White Cap Creek	Paradise	41,280
June 4	Selway River	Beaver Point	69,120
June 5	Selway River	Magruder R.S.	41,280
June 8	Selway River	Beaver Point	35,360
June 9	White Cap Creek	Paradise	54,400
June 10	Selway River	Deep Creek	54,400
June 11	Selway River	Magruder R.S.	54,400
June 12	Selway River	At hatching channel	27,200
June 12	White Cap Creek	Paradise	27,200
June 15-20	Selway River	At hatching channel	72,175
		Total counted	947,890
		Estimate into river from overflow	100,000
		Grand total	1,047,890
		Eyed eggs placed In channel	2,135,672
		Percent emergence	49.1

Table 16. Summary of eyed egg plants into Red River Incubation Channel, 1962-1980.

Year	Species	Number of eggs planted	Egg source
1962	Steelhead	102,500	Clearwater River (Lewiston Dam)
1963	Steelhead	484,000	Clearwater River (Lewiston Dam)
	Coho	600,000	Eagle Creek Hatchery (Oregon)
1964	Steelhead	390,897	Clearwater River (Lewiston Dam)
	Coho	1,000,250	--
1965	Steelhead	249,682	Clearwater River (Lewiston Dam)
	Coho	1,180,000	--
1966		0	--
1967	Steelhead	848,455	Clearwater River (Lewiston Dam)
1968	Steelhead	963,340	Clearwater River (Lewiston Dam)
1969	Steelhead	700,000	Dworshak Dam
1970	Spring chinook	1,631,500	Rapid River Hatchery
1971		0	--
1972	Spring chinook	1,293,592	Rapid River Hatchery
1973	Spring chinook	551,628	Rapid River Hatchery
1974		0	--
1975	Spring chinook	1,400,000	Cowlitz Hatchery
1976	Spring chinook	282,625	Rapid River Hatchery
1977		0	--
1978	Steelhead	1 ,617,750	Dworshak Hatchery
1979	Steelhead	1,644,500	Dworshak Hatchery
1980	Steelhead	669,500	Dworshak Hatchery

Table 17. Summary of anadromous salmonid fry emerging from Red River Incubation Channel, 1964-1980.

Brood year	Year emerging	Species	Number of fry emerging	Percent emergence	Distribution
1964	1964	Steelhead	298,000	76	American River and Red River
1964	1965	Coho	552,831	55	American River, Crooked River, Shissler Creek
1965	1965	Steelhead	212,507	85	American River, Crooked River, Shissler Creek
1965	1966	Coho	690,947	59	Upper Red River, American River, Crooked River, Shissler Creek
1967	1967	Steelhead	705,322	83	American River, Cooked River, Big Elk, Leggett and Newsome creeks
1968	1968	Steelhead	709,800	74	Red River and Crooked River, Shissler, Newsome and Pat Brennan creeks
1969-1970	1969-1970	Steelhead	Not enumerated		All at channel
1970	1971	Spring chinook	Estimated 90% mortality		All at channel
1971	1972	No eggs planted			
1972	1973	Spring chinook	No enumeration		All at channel
1973	1974	Spring chinook	No enumeration		All at channel
1974	1975	No eggs planted			
1975	1976	Spring chinook	No enumeration		All at channel
1976	1977	Spring chinook	No enumeration		All at channel
1977	1977	No eggs planted			
1978[1]/	1978	Steelhead	No enumeration		All at channel
1979	1979	Steelhead	No enumeration		All at channel
1980	1980	Steelhead	No enumeration		All at channel

[1]/USFS commenced operation of the channel.

Table 18. Summary of eyed egg plants into Crooked River Incubation Channel, 1966-1979.

Year	Species	Number of eggs planted	Egg source
1966	Steelhead	480,598	Clearwater River (Lewiston Dam)
	Coho	3,000,000	--
1967	Coho	3,066,000	Washougal
1968	Coho	2,000,000	Cascade National
1969		0	
1970	Spring Chinook	1,608,262	Rapid River
1971	Spring Chinook	800,000	Carson National
1972	Spring Chinook	1,525,131	Rapid River
1973	Spring Chinook	930,000	Rapid River
1974		0	
1975	Spring Chinook	1,687,000	Cowlitz Hatchery
1976	Spring Chinook	485,735	Rapid River
1977	Spring Chinook	1,037,340	Rapid River
1978	Spring Chinook	1,250,000	Rapid River
1979	Channel terminated (lease expired)		

Table 19. Summary of anadromous salmonid fry emerging from Crooked River Incubation Channel, 1966-1979.

Brood year	Year emerging	Species	Number of fry emerging	Percent emergence	Distribution
1966	1966	Steel head	436,956	91	South Fork tributaries
1966	1967	Coho	824,949	26	Red River, American River, Big Elk Creek, Newsome Creek
1967	1968	Coho	487,960	16	At channel
1968	1969	Coho	Not enumerated	--	--
1969	1970	No eggs planted		--	--
1970	1971	Spring chinook	39,856	--	Newsome Creek and Red River
1971	1972	Spring chinook	113,400	--	Newsome Creek
1972	1973	Spring chinook	No enumeration	--	All at channel
1973	1974	Spring chinook	34,920	--	Newsome Creek
1974	1975	No eggs planted		--	--
1975	1976	Spring chinook	No enumeration	--	All at channel
1976	1977	Spring chinook	No enumeration	--	All at channel
1977	1978	Spring chinook	No enumeration	--	All at channel
1978	1979	Spring chinook	No enumeration	--	All at channel
1979	Lease expired so channel was terminated.				

Table 20. Summary of fall chinook eyed egg plants and emergent fry, Fenn Incubation Channel on the lower Selway River, 1960-1967.

Year	Number of eggs planted	Number of fry emerging	Percent emergence	Egg source
1960	535,000	Not enumerated	--	Spring Creek National
1961	750,000	Not enumerated	--	Spring Creek National
1962	400,000	Not enumerated	--	Spring Creek National
1963	1,000,000	Not enumerated	--	Spring Creek National
1964	1,000,000	Not enumerated	--	Spring Creek National
1965	0	62,000	6	
1966	1,500,000	--	--	Spring Creek National
1967[1]/	1,548,000	1,485,965	99	Spring Creek National
1968	0	687,000	44	
Total	6,733,000			

Fall chinook program discontinued in 1968.

[1]/This year 587,917 fall chinook fingerlings were also released into Middle Fork Clearwater River.

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